

Conceptual Design of Module Manifolds for the NO ν A Detector

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Executive Summary

This note presents conceptual designs for manifolds for liquid scintillator modules for the NO ν A far detector. These designs are for discussion purposes only. They have not been approved by the NO ν A collaboration.

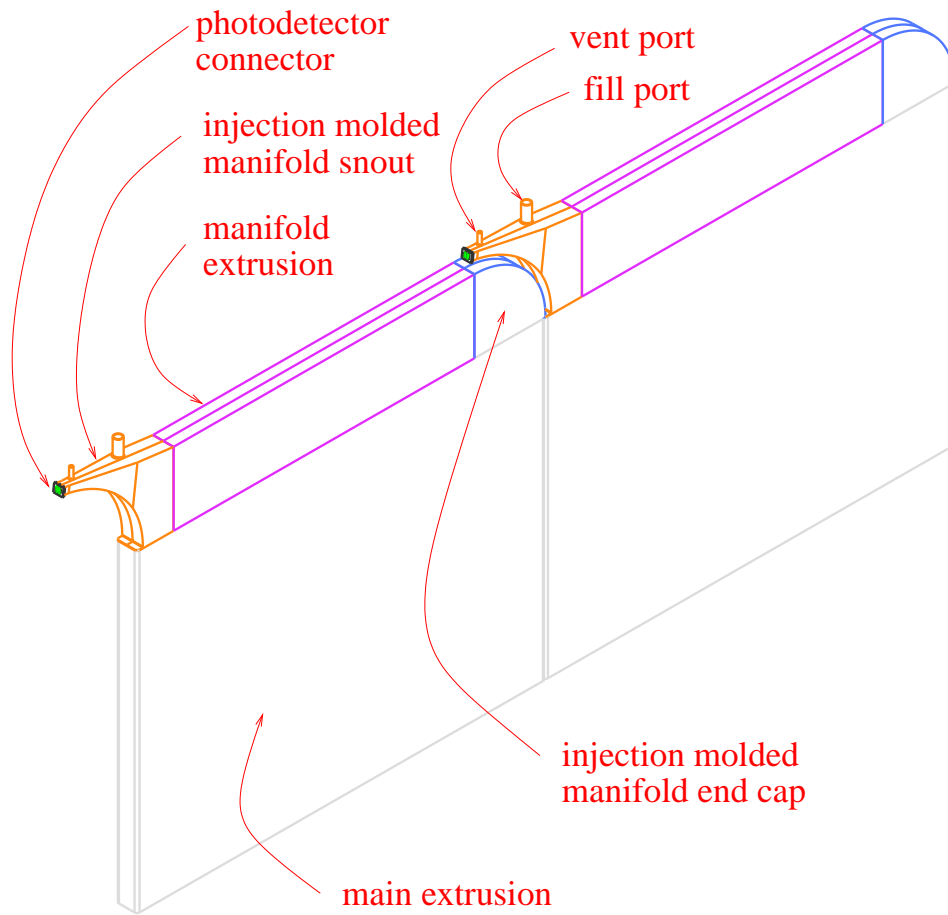


Figure 1: Manifold region of two adjoining modules. Cost is reduced by covering the majority of the manifold region with plastic extrusions. Injection molded snouts support the photodetector connectors. They also provide fill and vent ports. Injection molded end caps provide clearance for adjoining snouts. Identical manifolds are used on both the vertical and horizontal modules.

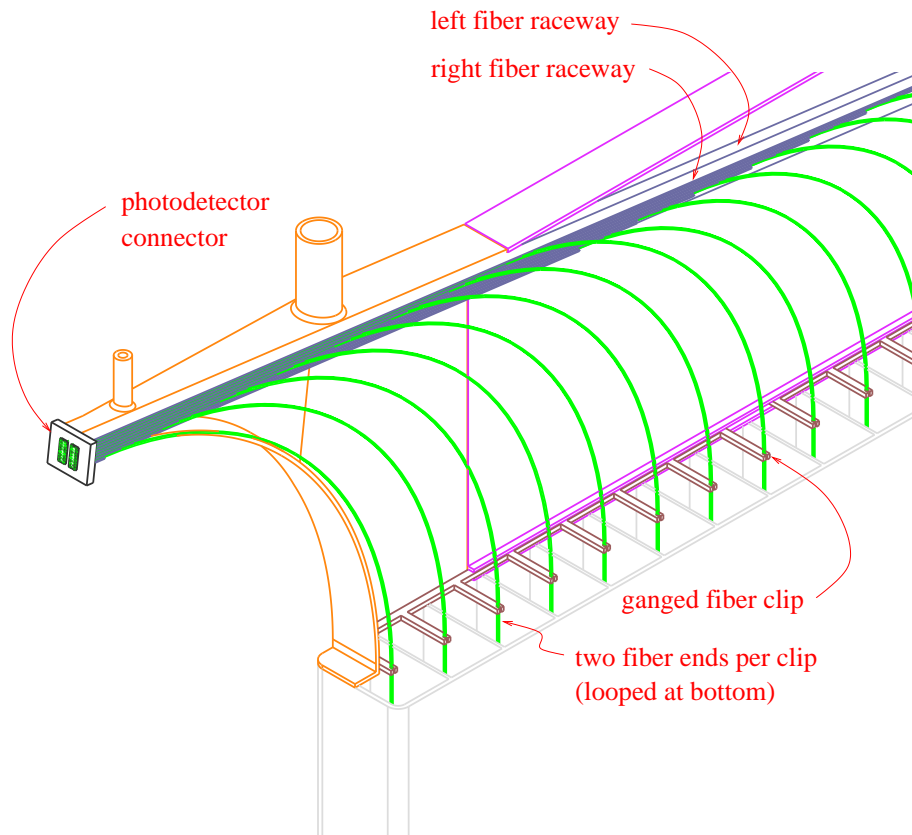


Figure 2: Cutaway view of the snout region of a manifold. Ganged fiber clips positively position the optic fibers at the top of each main extrusion. Fiber raceways serve three purposes: aligning each fiber to the photodetector, controlling the fiber bend radii, and facilitating assembly. Stepped ribs on the raceways separate the fibers into layers matching the photodetector pixel pattern.

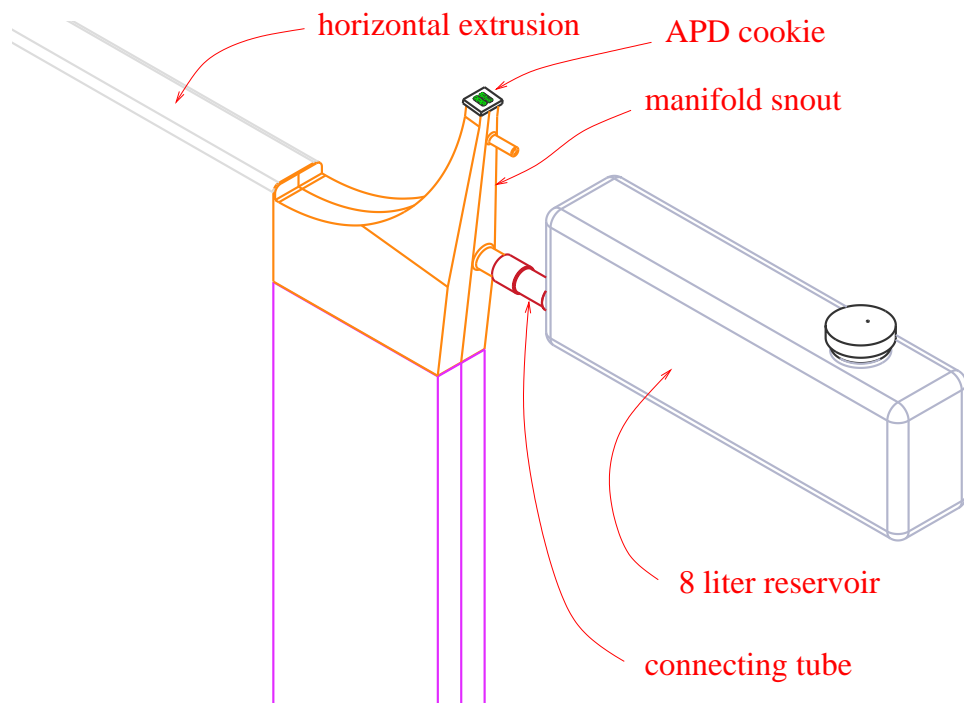


Figure 3: Reservoir to accommodate thermal expansion of liquid scintillator on horizontal modules. An 8 liter reservoir attaches to the fill port of the manifold snout with a connecting tube. The fluid level always remains below the level of the photodetector connectors. The reservoirs are approximately 1.5 times the depth of a module, providing space for mounting brackets.